

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 April 2004 (22.04.2004)

PCT

(10) International Publication Number
WO 2004/034532 A1

(51) International Patent Classification⁷: **H01S 5/0625**

Century Court, 100 Upper George Street, Dun Laoghaire,
Dublin (IE).

(21) International Application Number:

PCT/EP2003/011201

(74) Agents: **WANT, Clifford, J. et al.**; Harrison Goddard
Foote, 40 - 43 Chancery Lane, London WC2A 1JA (GB).

(22) International Filing Date: 9 October 2003 (09.10.2003)

(25) Filing Language: English

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data:

0223448.2 9 October 2002 (09.10.2002) GB

(71) Applicant (*for all designated States except US*):
TSUNAMI PHOTONICS LIMITED [IE/IE]; Blocks
B & D Century Court, 100 Upper George Street, Dun
Laoghaire, Dublin (IE).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **DONOHUE, Gerry**
[IE/IE]; Tsunami Photonics Limited, Blocks B & D
Century Court, 100 Upper George Street, Dun Laoghaire,
Dublin (IE). **O'GORMAN, Neal** [IE/IE]; Tsunami Pho-
tonics Limited, Blocks B & D Century Court, 100 Upper
George Street, Dun Laoghaire, Dublin (IE). **O'DOWD,**
Ronan [IE/IE]; Tsunami Photonics Limited, Blocks B & D

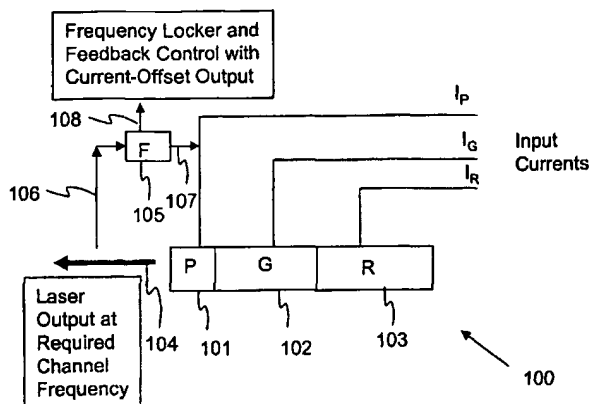
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: CHARACTERIZATION AND NON-INVASIVE CORRECTION OF OPERATIONAL CONTROL CURRENTS OF A TUNEABLE LASER



(57) Abstract: A tuneable multi-section semiconductor laser 100 is characterised by applying currents in step-wise increments to sections 101, 102, 103 of the laser respectively and measuring power output by the laser to determine values of the applied currents corresponding to stable operating conditions for which the laser emits radiation at wavelengths remote from mode boundaries 51, 52; 141, 142 of the laser. The wavelength of the emitted radiation is measured and variations in the applied currents required to cross a mode boundary such that the laser undergoes a mode jump to emit radiation at a significantly different wavelength are also measured. These values are stored in a look-up table for use of the laser under the characterising conditions and state of ageing of the laser. The applied currents are changed, to cause a predetermined incremental change in wavelength of the emitted radiation, within the said mode boundaries, and the further values are also stored. This is repeated for further incremental changes in wavelength. The further values may be stored in the original look-up table or in further look-up tables. The radiation emitted from the laser is monitored and the applied currents controlled by the further values whenever the output changes by a predetermined proportion of the incremental change.

WO 2004/034532 A1



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.